INSTALLATION MANUAL

English
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PACKAGED AIR CONDITIONER

Model No. Urban Multi Series

(Ceiling-mounted Duct type)

CS-40EMHPK **CS-80EMHPK** **CS-200EMHPK**
CS-50EMHPK **CS-100EMHPK** **CS-250EMHPK**
CS-63EMHPK **CS-125EMHPK**

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION.
KEEP THIS MANUAL IN A HANDY PLACE FOR FUTURE REFERENCE.

LESEN SIE DIESE ANWEISUNGEN VOR DER INSTALLATION SORGFÄLTIG DURCH.
BEWAHREN SIE DIESE ANLEITUNG FÜR SPÄTERE BEZUGNAHME GRIFFBEREIT AUF.

LIRE SOIGNEUSEMENT CES INSTRUCTIONS AVANT L'INSTALLATION.
CONSERVER CE MANUEL A PORTEE DE MAIN POUR REFERENCE ULTERIEURE.

LEA CUIDADOSAMENTE ESTAS INSTRUCCIONES ANTES DE INSTALAR.
GUARDE ESTE MANUAL EN UN LUGAR A MANO PARA LEER EN CASO DE TENER ALGUNA DUDA.

PRIMA DELL'INSTALLAZIONE LEGGERE ATTENTAMENTE QUESTE ISTRUZIONI.
TENERE QUESTO MANUALE A PORTATA DI MANO PER RIFERIMENTI FUTURI.

ΔΙΑΒΑΣΤΕ ΠΡΟΣΕΚΤΙΚΑ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ ΠΡΙΝ ΑΠΟ ΤΗΝ ΕΓΚΑΤΑΣΤΑΣΗ ΕΧΕΤΕ ΑΥΤΟ ΤΟ ΕΓΧΕΙΡΙΔΙΟ ΕΥΚΑΙΡΟ ΓΙΑ ΝΑ ΤΟ ΣΥΜΒΟΥΛΕΥΕΣΤΕ ΣΤΟ ΜΕΛΛΟΝ.

LEES DEZE INSTRUCTIES ZORGVULDIG DOOR VOOR INSTALLATIE. BEWAAR DEZE HANDLEINDING WAAR U HEM KUNT TERUGVINDEN VOOR LATERE NASLAG.

LEIA COM ATENÇÃO ESTAS INSTRUÇÕES ANTES DE REALIZAR A INSTALAÇÃO.
MANTENHA ESTE MANUAL AO SEU ALCANCE PARA FUTURAS CONSULTAS.

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1. SAFETY CONSIDERATIONS

Please read these “SAFETY CONSIDERATIONS” carefully before installing air conditioning equipment and be sure to install it correctly. After completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it maintained. Also, inform customers that they should store this installation manual along with the operation manual for future reference.
This air conditioner comes under the term “appliances not accessible to the general public”.

Meaning of warning and caution symbols.

⚠ **WARNING** ..... Failure to observe a warning may result in death.

⚠ **CAUTION** ..... Failure to observe a caution may result in injury or damage to the equipment.

⚠ WARNING

- Ask your dealer or qualified personnel to carry out installation work. Do not try to install the machine yourself. Improper installation may result in water leakage, electric shocks or fire.
- Perform installation work in accordance with this installation manual. Improper installation may result in water leakage, electric shocks or fire.
- Be sure to use only the specified accessories and parts for installation work. Failure to use the specified parts may result in water leakage, electric shocks, fire or the unit falling.
- Install the air conditioner on a foundation strong enough to withstand the weight of the unit. A foundation of insufficient strength may result in the equipment falling and causing injuries.
- Carry out the specified installation work after taking into account strong winds, typhoons or earthquakes. Improper installation work may result in the equipment falling and causing accidents.
- Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local laws and regulations and this installation manual. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.
- Make sure that all wiring is secured, the specified wires and used, and no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.
- When wiring the power supply and connecting the wiring between the indoor and outdoor units, position the wires so that the switch box cover can be securely fastened. Improper positioning of the switch box cover may result in electric shocks, fire or the terminals overheating.
- If the refrigerant gas leaks during installation, ventilate the area immediately. Toxic gas may be produced if the refrigerant gas comes into contact with fire.

- After completing the installation work, check that the refrigerant gas does not leak.
  Toxic gas may be produced if the refrigerant gas leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker.
- Before touching electrical parts, turn off the unit.

⚠ CAUTION

- Ground the air conditioner.
  Do not connect the ground wire to gas or water pipes, lightning conductor or a telephone ground wire. Incomplete grounding may result in electric shocks.
- Be sure to install an earth leakage breaker.
  Failure to install an earth leakage breaker may result in electric shocks.
- While following the instructions in this installation manual, install drain piping in order to ensure proper drainage and insulate piping in order to prevent condensation.
  Improper drain piping may result in water leakage and property damage.
- Install the indoor and outdoor units, power cord and connecting wires at least 1 meter away from televisions or radios in order to prevent image interference or noise.
  (Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the noise.)
- Remote controller (wireless kit) transmitting distance can result shorter than expected in rooms with electronic fluorescent lamps. (inverter or rapid start types)
  Install the indoor unit as far away from fluorescent lamps as possible.
- Do not install the air conditioner in the following locations:
  (a) where a mineral oil mist or an oil spray or vapor is produced, for example in a kitchen
  Plastic parts may deteriorate and fall off or result in water leakage.
  (b) where corrosive gas, such as sulfurous acid gas, is produced
  Corroding copper pipes or soldered parts may result in refrigerant leakage.
  (c) near machinery emitting electromagnetic waves
  Electromagnetic waves may disturb the operation of the control system and result in a malfunction of the equipment.
  (d) where flammable gases may leak, where there are carbon fiber or ignitable dust suspensions in the air, or where volatile flammables such as thinner or gasoline are handled.
  Operating the unit in such conditions may result in fire.

2. BEFORE INSTALLATION

- Decide upon a line of transport.
- Leave the unit inside its packaging while moving, until reaching the installation site. Use a sling of soft material, where unpacking is unavoidable or protective plates together with a rope when lifting, to avoid damage or scratches to the unit.
- When moving the unit at or affter opening, hold the unit by the hanger brackets (× 4). Do not apply force to the refrigerant piping, drain piping or plastic parts.
- Refer to the installation manual of the outdoor unit for items not described in this manual.

2-1 PRECAUTIONS

- Be sure to read this manual before installing the indoor unit.
- Entrust installation to the place of purchase or a qualified serviceman. Improper installation could lead to leaks and, in worse cases, electric shock of fire.
- When installing the unit in a small room, take measures against to keep refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage. Contact the place of purchase for more information. Excessive refrigerant in a closed ambient can lead to oxygen deficiency.
- Use only parts provided with the unit or parts satisfying required specifications. Unspecified parts could cause the unit to fall out of place, or could lead to leaks and, in worse cases, electric shock or fire.
- Do not install or operate the unit in rooms mentioned below.
  - **Laden with mineral oil, or filled with oil vapor or spray like in kitchens. (Plastic parts may deteriorate which could eventually cause the unit to fall out of place, or could lead to leaks.)**

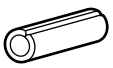
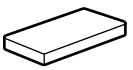
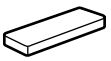
- **Where corrosive gas like sulfurous gas exists. (Copper tubing and brazed spots may corrode which could eventually lead to refrigerant leaks.)**
- **Where exposed to combustible gases and where volatile flammable gas like thinner or gasoline is used. (Gas in the vicinity of the unit could ignite.)**
- **Where machines can generate electromagnetic waves. (Control system may malfunction.)**
- **Where the air contains high levels of salt such as that near the ocean and where voltage fluctuates greatly such as that in factories.**
  Also in vehicles or vessels.

- Be sure to mount an air filter (part to be procured in the field) in the suction air passage in order to prevent water leaking, etc.
- This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. If installed as a household appliance it could cause electromagnetic interference.

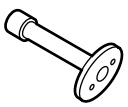
2-2 ACCESSORIES

Check the following accessories are included with the unit.

〈CS-40·50·63·80·100·125EMHPK〉

Name	Clamp metal	Drain hose	Insulation for fitting	Sealing pad	Clamp	Screws for duct flanges	
Quantity	1 pc.	1 pc.	1 pc.	Large and small 1 each	4 pcs.	As described in table below	(Other) • Operation manual • Installation manual • Washers (8 pcs.)
Shape			 for liquid pipe for gas pipe	 Large  Small		CS-40•50•63EMHPK 16 CS-80•100•125EMHPK 28	

〈CS-200·250EMHPK〉

Name	Attached piping (1)	(Other)
Quantity	1 set	• Operation manual • Installation manual • Screws for flange connection (M5) (48 pcs.) • Insullation material (for hanger)(2 pcs.) • Washers (8 pcs.) • Clamps (2 pcs.)
Shape		

2-3 OPTIONAL ACCESSORIES

- These are two types of remote controllers: wired and wireless. Select a remote controller according to customer request and install in an appropriate place.

Remote controller		Model No.
Wired type		CZ-01RT11P
Wireless type (Separate type)	Heat pump type	CZ-02RWF12P
	Cooling only type	–

NOTE

- If the customer wishes to use a remote controller that is not listed above, select a suitable remote controller after consulting catalogs and technical materials.

FOR THE FOLLOWING ITEMS, TAKE SPECIAL CARE DURING CONSTRUCTION AND CHECK AFTER INSTALLATION IS FINISHED.

Items to be checked after completion of work

Items to be checked	If not properly done, what is likely to occur	Check
Is the indoor unit fixed firmly?	The unit may drop, vibrate or make noise.	
Is the gas leak test finished?	It may result in insufficient cooling.	
Is the unit fully insulated?	Condensate water may drip.	
Does drainage flow smoothly?	Condensate water may drip.	
Does the power supply voltage correspond to that shown on the name plate?	The unit may malfunction or the components burn out.	
Are wiring and piping correct?	The unit may malfunction or the components burn out.	
Is the unit safely grounded?	Dangerous at electric leakage.	
Is wiring size according to specifications?	The unit may malfunction or the components burn out.	
Is something blocking the air outlet or inlet of either the indoor or outdoor units?	It may result in insufficient cooling.	
Are refrigerant piping length and additional refrigerant charge noted down?	The refrigerant charge in the system is not clear.	

2-4 NOTES TO INSTALLER

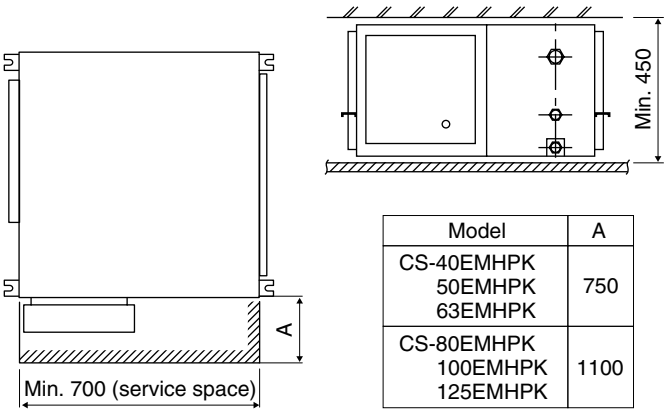
- Read this manual carefully to ensure correct installation. Be sure to instruct the customer how to operate the system showing him/her the enclosed operation manual.
- Explain to the customer what system is installed on the site and be sure to fill in what is required in the column shown on “WHAT TO DO BEFORE OPERATION” of the operation manual attached to the outdoor unit.

3. SELECTING INSTALLATION SITE

(1) Select an installation site where the following conditions are fulfilled and that meets with your customer’s approval.
- If supporting structural members are not strong enough to take the unit’s weight, the unit could fall out of place abd cause serious injury.
- Where sufficient clearance for maintenance and service can be ensured. **(Refer to Fig. 1)**
- Where optimum air distribution can be ensured.
- Where nothing blocks the air passage.
- Where condensate can be properly drained.
- Where piping between indoor and outdoor units is possible within the allowable limit. (Refer to the installation manual of the outdoor unit.)
- Keep the indoor and outdoor units, power cable and transmission wiring, at least 1 m from TVs and radios, to prevent distorted pictures and static. (Depending on the type and source of the electrical waves, static may be heard even when more than 1 m away.)

(2) Check whether the place is strong enough to bear the weight of the unit or not. If there is a risk, reinforce the place before installing the unit.

〈 CS-40 · 50 · 63 · 80 · 100 · 125EMHPK 〉



Model	A
CS-40EMHPK 50EMHPK 63EMHPK	750
CS-80EMHPK 100EMHPK 125EMHPK	1100

〈CS-200 · 250EMHPK 〉

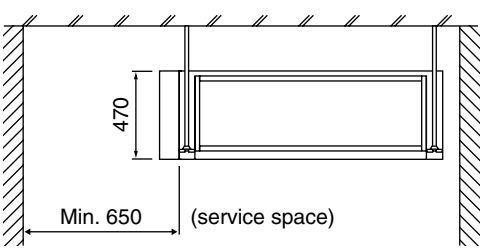
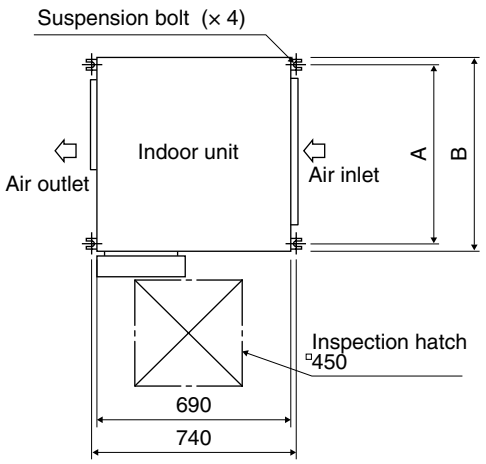


Fig. 1

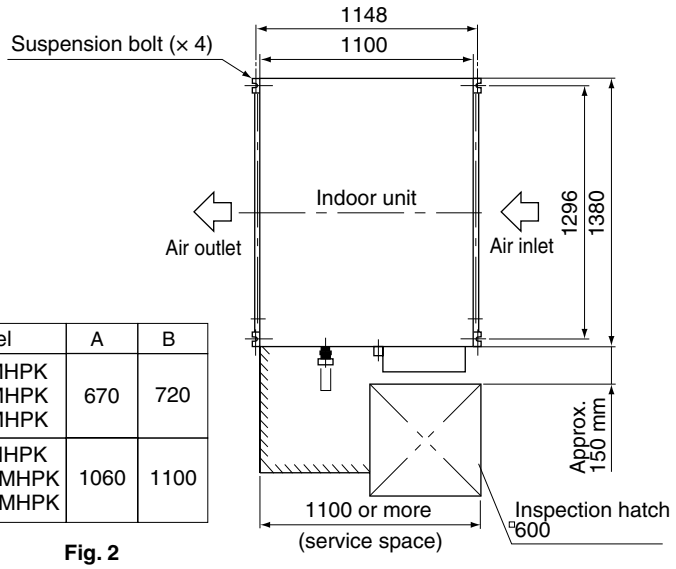
4. PREPARATIONS BEFORE INSTALLATION

(1) Relative positions of indoor unit and suspension bolt. **(Refer to Fig. 2)**

〈 CS-40 · 50 · 63 · 80 · 100 · 125EMHPK 〉



〈 CS-200 · 250EMHPK 〉



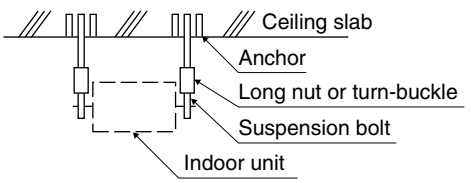
Model	A	B
CS-40EMHPK 50EMHPK 63EMHPK	670	720
CS-80EMHPK 100EMHPK 125EMHPK	1060	1100

Fig. 2

(2) Install a canvass duct to the air discharge outlet and air inlet so that vibration from the machine body isn't transmitted to the duct or ceiling. You should also apply acoustic (insulation material) to the inside of the duct, and vibration insulation rubber to the suspension bolts.

(3) Install suspension bolts.
(Use bolts of 10 mm diameter.)
- Install the equipment where supporting structures are strong enough to bear the equipment's weight. Use embedded inserts or anchor bolts with new buildings and hole-in-anchors with old buildings.

〈 Installation example 〉



Note) All the above parts are part to be procured in the field.

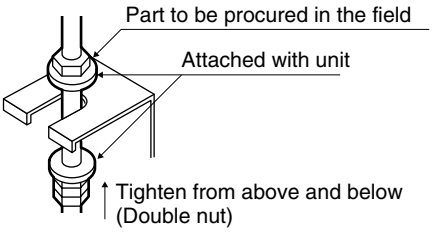
5. INDOOR UNIT INSTALLATION

〈〈When installing optional accessories, read also the installation manual for optional accessories. Depending on the field conditions, it may be easier to install optional accessories before the indoor unit is installed.〉〉

(1) Fix the hanger bracket to the suspension bolt. Tighten both upper and lower nuts firmly using washers.

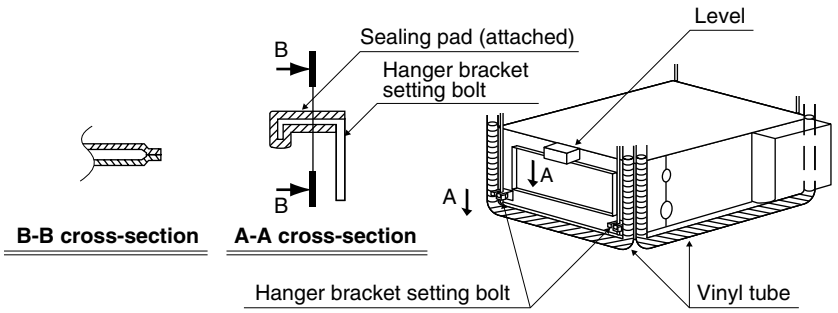
(2) Adjust the height of the unit.

(3) Make sure the unit is level.
- Level the unit with a level when installing. If the unit is not level, it could become the source of water leaks.
- When leveling the unit, check all four corners with a level or a vinyl tube containing water. (See the figure on the right.)



(4) Tighten the nuts on the top.

(5) Insulate the two hanger brackets on the discharge side with the attached sealing pad. (× 2) Insulate the edges so that the surface and edges of the hanger brackets cannot be seen. (CS-200 · 250EMHPK)

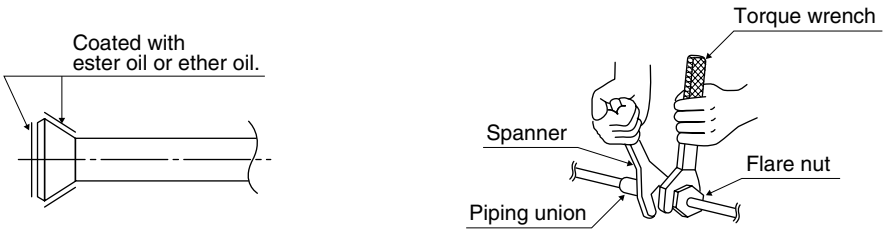


6. REFRIGERANT PIPING WORK

⟨For refrigerant piping of outdoor units, see the installation manual attached to the outdoor unit.⟩
⟨Be sure to thermally insulate both the gas pipes and fluid pipes. Water leakage may result if the pipes are not insulated. (Only use insulation resistant to at least 120 °C.)
Furthermore, if the temperature/humidity in the refrigerant piping are expected to exceed 30 °C or 80% RH, the thermal insulation of the refrigerant pipes should be strengthened (to be a thickness of 20 mm or more). There may be some condensation on the surface of the insulation material.⟩
⟨Before rigging tubes, check which type of refrigerant is used. Proper operation is not possible if the types of refrigerant are not the same.⟩

6-1 CAUTION

- **Use a pipe cutter and flare suitable for the type of refrigerant.**
- **Apply ester oil or ether oil around the flare portions before connecting.**
- **To prevent dust, moisture or other foreign matter from infiltrating the tube, either pinch the end or cover it with tape.**
- The outdoor unit is charged with refrigerant.
- To prevent flare nut cracking and gas leaks, be sure to use both a spanner and torque wrench together, as shown in the drawing below, when connecting or disconnecting pipes to/from the unit.
- Refer to the Table 1 for flare measurements.
- Do not mix anything other than the specified refrigerant, such as air, etc., inside the refrigerant circuit.
- When connecting the flare nut, coat the flare both inside and outside with refrigerating machine oil and initially tighten by hand 3 or 4 turns before tightening firmly.
- Refer to the Table 1 for tightening torque. Overtightening may damage the flare.
- Ventilate if refrigerant gas leaks while performing work.



⚠ CAUTION

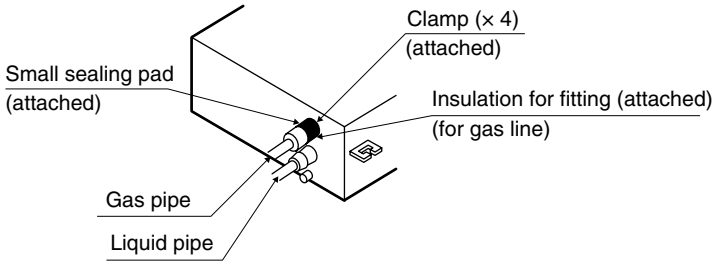
Overtightening may damage the flare and cause leaks.

Use " Tabel 2 " as a reference if a torque wrench is not available. Once work is complete, make sure there is no gas leaking. As the flare nut is tightened with the wrench, the torque will suddenly increase. From that position, tighten the nut to the angle shown on " Tabel 2 ".

- After checking the pipe-connection for gas leakage, be sure to insulate the liquid and gas piping, referring to the figure below.
- Wrap the sealing pad (attached) only around the insulation for the joints on the gas piping side.

CAUTION

Be sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed piping may cause condensation or burns if touched.



NOTE

- Attached piping is needed for connecting gas piping of CS-200 · 250EMHPK. Use attached piping according to the size of the piping to be connected.

- Connect refrigerant piping and branching according to the attached installation manuals that come with the outdoor unit.

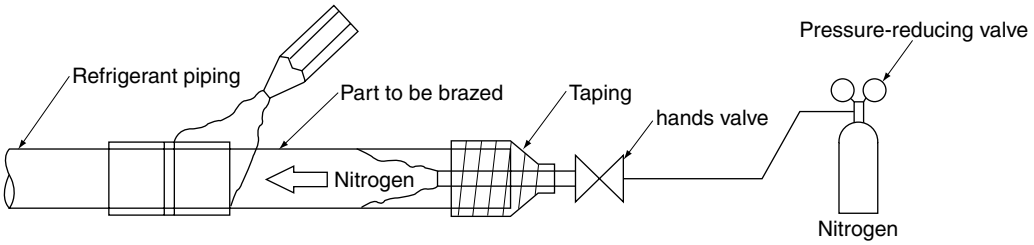
Indoor units to be connected	Gas piping diameter	Liquid piping diameter
CS-200EMHPK	ϕ25.4 Use attached piping.	ϕ12.7
CS-250EMHPK	ϕ28.6 Use attached piping.	ϕ12.7

- When brazing the refrigerant piping, only begin brazing after having carried out nitrogen substitution (NOTE 1) or while inserting nitrogen into the refrigerant piping (NOTE 2). Once this is done, connect the indoor unit with a flared or a flanged connection.

NOTES

1. Refer to the “Manual for Multi Installation for Buildings” for directions on how to carry out nitrogen substitution. (Inquire with your dealer.)

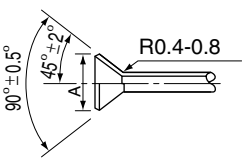
2. Nitrogen should be set to 0.02 Mpa (0.2 kg/cm^2) with a pressure-reducing valve if brazing while inserting nitrogen into the piping.



The flare nuts used must be those included with the main body.

- Refer to Table 1 for tightening torque.

Table 1

Pipe gauge	Tightening torque	Flare dimension A (mm)	Flare shape
ϕ 6.4	14.2 – 17.2N·m (144 – 176 kgf·cm)	8.3 – 8.7	
ϕ 9.5	32.7 – 39.9N·m (333 – 407 kgf·cm)	12.0 – 12.4	
ϕ 12.7	49.5 – 60.3N·m (504 – 616 kgf·cm)	15.4 – 15.8	
ϕ 15.9	61.8 – 75.4N·m (630 – 770 kgf·cm)	18.6 – 19.0	
ϕ 19.1	97.2 – 118.6N·m (990 – 1210 kgf·cm)	22.9 – 23.3	

— Not recommendable but in case of emergency

You must use a torque wrench but if you are obliged to install the unit without a torque wrench, you may follow the installation method mentioned below.

After the work is finished, make sure to check that there is no gas leak.

When you keep on tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases. From that position, further tighten the flare nut the angle shown below:

Table 2

Pipe size	Further tightening angle	Recommended arm length of tool
ϕ 6.4 (1/4")	60 to 90 degrees	Approx. 150mm
ϕ 9.5 (3/8")	60 to 90 degrees	Approx. 200mm
ϕ 12.7 (1/2")	30 to 60 degrees	Approx. 250mm
ϕ 15.9 (5/8")	30 to 60 degrees	Approx. 300mm
ϕ 19.1 (3/4")	20 to 35 degrees	Approx. 450mm

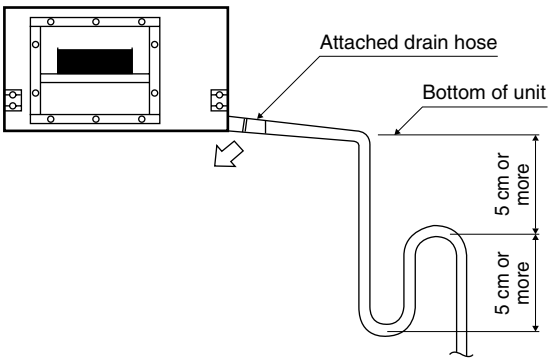
7. DRAIN PIPING WORK

⟨⟨Rig the drain pipe as shown below and take measures against condensation. Improperly rigged piping could lead to leaks and eventually wet furniture and belongings.⟩⟩
⟨⟨Insulate the drain hose inside the building.⟩⟩

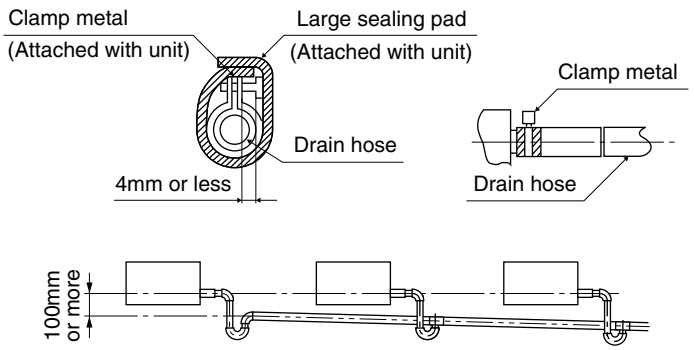
(1) Install the drain pipes.

CS-40-125EMHPK

- Keep piping as short as possible and slope it downwards so that air may not remaine trapped inside the pipe.
- Keep pipe size equal to or greater than that of the connecting pipe (Vinyl pipe of 25 mm nominal diam. and 32 mm outer diam.)



- Use the attached drain hose and clamp. Tighten the clamp firmly.
- Insulate the clamp metal with the attached sealing pad.
- **There is negative pressure inside the unit relative to atmospheric pressure when the unit is running, so be sure to provide drain frap on the drain outlet. (See the figure)**
- **In order to prevent foreign matter from building up inside the piping, you should avoid curves as much as possible, and arrange so the trap can be cleaned.**



NOTE

- If installing central drain piping, install according to the following right figure. (Install a drain trap for each indoor unit.)

CS-200·250EMHPK

- A drain pipe need not be installed.
- The diameter of the piping is the same as that of the connecting pipe (PS1B), and should be kept equal to or greater than that of the connecting pipe.

(2) After piping work is finished, check drainage flows smoothly.

CAUTION

Drain piping connections
Do not connect the drain piping directly to sewage pipes that smell of ammonia. The ammonia in the sewage might enter the indoor unit through the drain pipes and corrode the heat exchanger.

8. ELECTRIC WIRING WORK

8-1 GENERAL INSTRUCTIONS

- All field supplied parts and materials, electric works conform to local codes.
- Use copper wire only.
- Follow the “WIRING DIAGRAM” attached to the unitbody to wire the outdoor unit, indoor units and the remote controller. For details on hooking up the remote controller, refer to the “INSTALLATION MANUAL OF REMOTE CONTROLLER.”
- All wiring must be performed by an authorized electrician.
- This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B . . . , and be sure the terminal board wiring to the outdoor unit and HR box are properly matched. If wiring and piping between the outdoor unit and an indoor unit are mismatched, the system may malfunction.
- A circuit breaker capable of shutting down power supply to the entire system must be installed.

8-2 ELECTRICAL CHARACTERISTICS

Units				Power supply		Fan motor	
Model	Hz	Volts	Voltage range	MCA	MFA	kW	FLA
CS-40·50EMHPK	50	220-240	Max. 264 Min. 198	1.3	15	0.100	1.0
CS-63EMHPK				1.5	15	0.160	1.2
CS-80·100EMHPK				2.5	15	0.270	2.0
CS-125EMHPK				3.8	15	0.350	3.0
CS-200EMHPK				8.1	15	0.380×2	6.5
CS-250EMHPK				9.0	15	0.380×2	7.2

MCA: Min. Circuit Amps (A); MFA: Max. Fuse Amps (A)
kW: Fan Motor Rated Output (kW); FLA: Full Load Amps (A)

8-3 SPECIFICATIONS FOR FIELD SUPPLIED FUSES AND WIRE

Model	Power supply wiring			Transmission wiring	
	Field fuses	Wire	Size	Wire	Size
CS-40·50EMHPK	15A	H05VV-U3G	Size must comply with local codes.	Vinyl cord with sheath or cable (2 wire) (NOTE 2)	0.75 - 1.25 mm²
CS-63EMHPK					
CS-80·100EMHPK					
CS-125EMHPK					
CS-200EMHPK					
CS-250EMHPK					

NOTES

1. Allowable length of transmission wiring between indoor/outdoor units and between the indoor unit and the remote controller is as follows.
(1) Outdoor unit – Indoor unit: Max. 1000 m (Total wiring length: 2000 m)
(2) Indoor unit – Remote controller: Max. 500 m

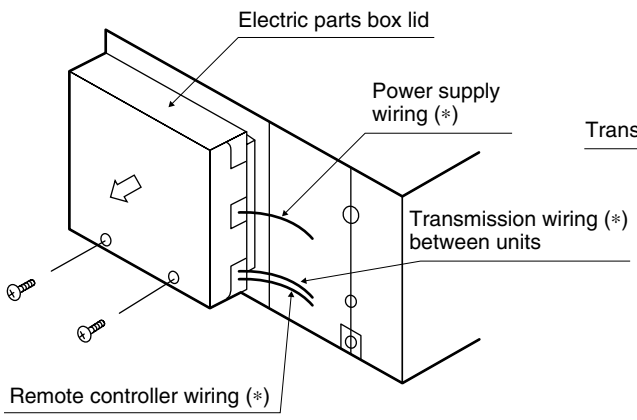
2. Insulated thickness:1 mm or more

9. WIRING EXAMPLE AND HOW TO SET THE REMOTE CONTROLLER

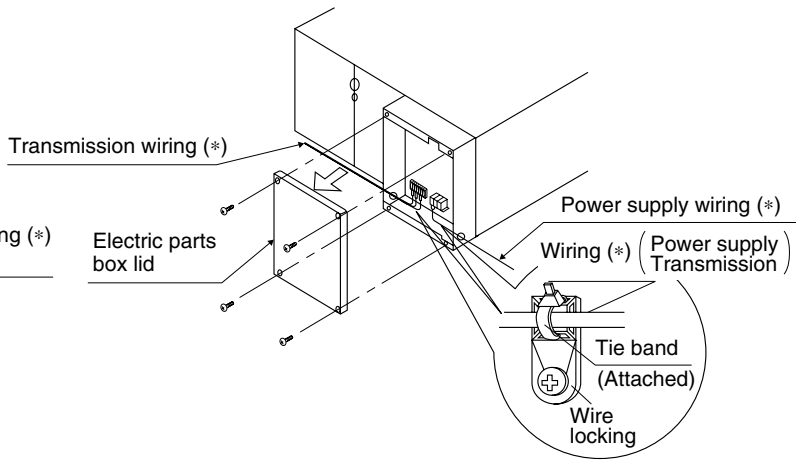
9-1 HOW TO CONNECT WIRINGS

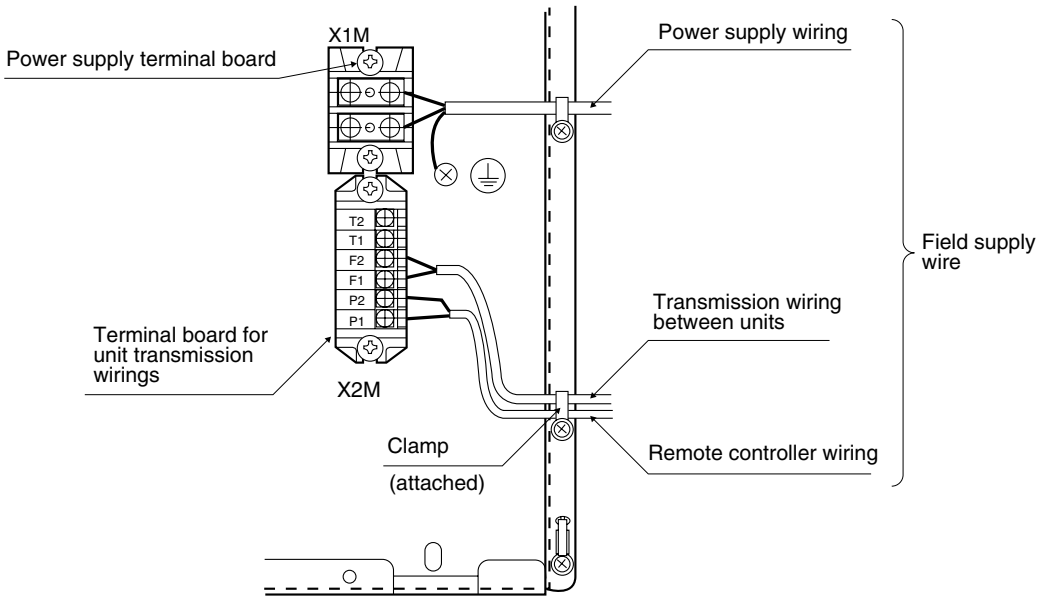
(Remove the electric parts box lid and wire as shown in the figure below.)

〈CS-40 · 50 · 63 · 80 · 100 · 125EMHPK〉

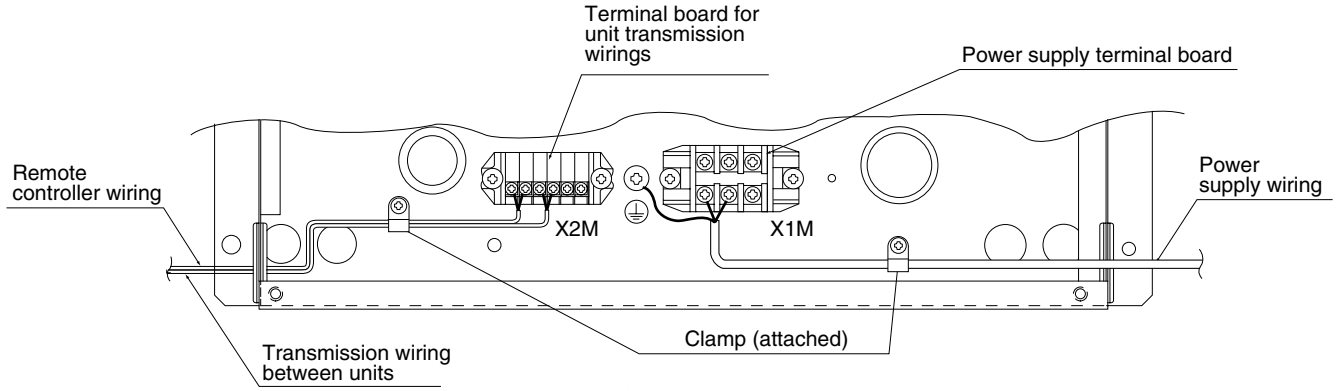


〈CS-200 · 250EMHPK〉





〈 CS-40 · 50 · 63 · 80 · 100 · 125EMHPK 〉



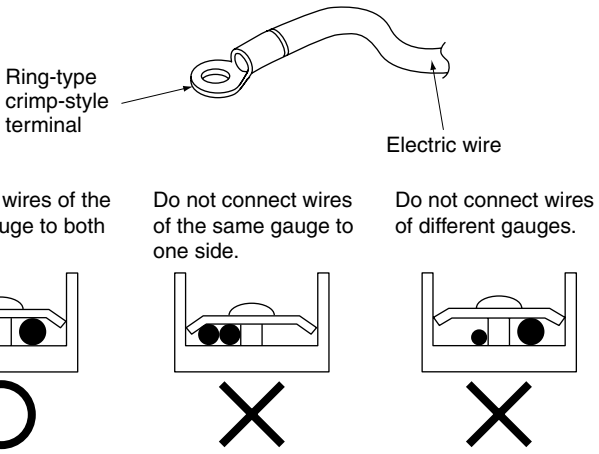
〈 CS-200 · 250EMHPK 〉

⚠ CAUTION

- When cramping wiring, use the included cramping material to do an appropriate cramp to prevent undue pressure on the wiring connections. When carrying out the wiring, bundle the wires to prevent the switch box lid from lifting, and attach the lid firmly. When attaching the switch box avoid getting wires caught always use a wiring through-lid to prevent damage to the wires.
- Make sure to avoid external force to the field wiring(∗) such as by laying them in protection pipes or in the wall.

[PRECAUTIONS]

1. Use ring-type crimp-style terminals for connecting wires to the power supply terminal board. If unavailable, observe the following points when wiring.
   - Do not connect wires of different gauge to the same power supply terminal. (Looseness in the connection may cause overheating.)
   - When connecting wires of the same gauge, connect them according to the righthand figure.
   - Use the specified electric wire. Connect the wire securely to the terminal. Lock the wire down without applying excessive force to the terminal. (Tightening torque: 1.31N · m ±10 %)


Ring-type crimp-style terminal
Electric wire
Connect wires of the same gauge to both sides.
Do not connect wires of the same gauge to one side.
Do not connect wires of different gauges.

2. Keep total current of crossover wiring between indoor units less than 12 A.
   Branch the line outside the terminal board of the unit in accordance with electrical equipment standards,

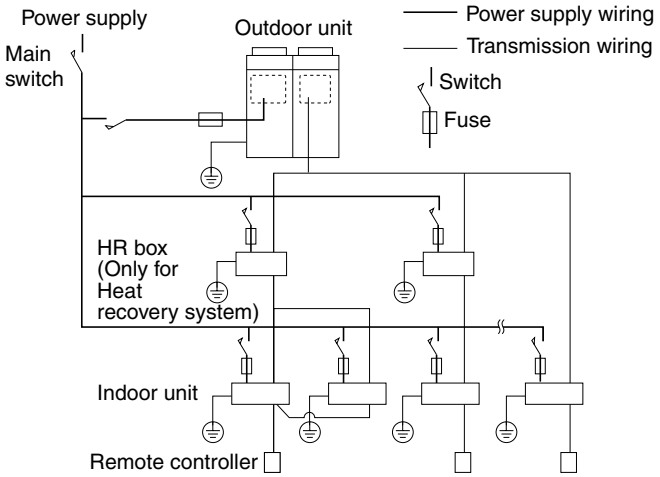
when using two power wiring of a gauge greater than 2 mm² (ϕ1.6).
The branch must be sheathed to provide an equal or greater degree of insulation as the power supply wiring itself.

3. Do not connect wires of different gauge to the same grounding terminal. Looseness in the connection may deteriorate protection.
4. Keep transmission wiring at least 50 mm away from power supply wiring. The equipment may malfunction if subjected to electrical (external) noise.
5. For remote controller wiring, refer to the “INSTALLATION MANUAL OF REMOTE CONTROLLER” attached to the remote controller.
6. **Never connect power supply wiring to the terminal board for transmission wiring. A mistake of the sort could damage the entire system.**
7. Use only specified wire and tightly connect wires to terminals. Be careful wires do not place external stress on terminals. Keep wiring in neat order and so as not to obstruct other equipment such as popping open the service cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in worse case, electric shock or fire.

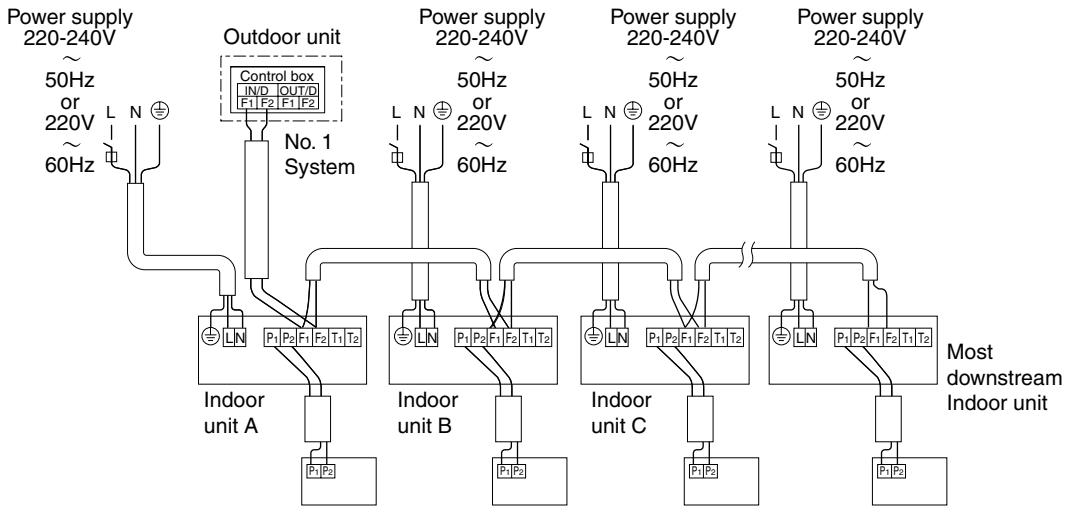
9-2 WIRING EXAMPLE

- Fit the power supply wiring of each unit with a switch and fuse as shown in the drawing.

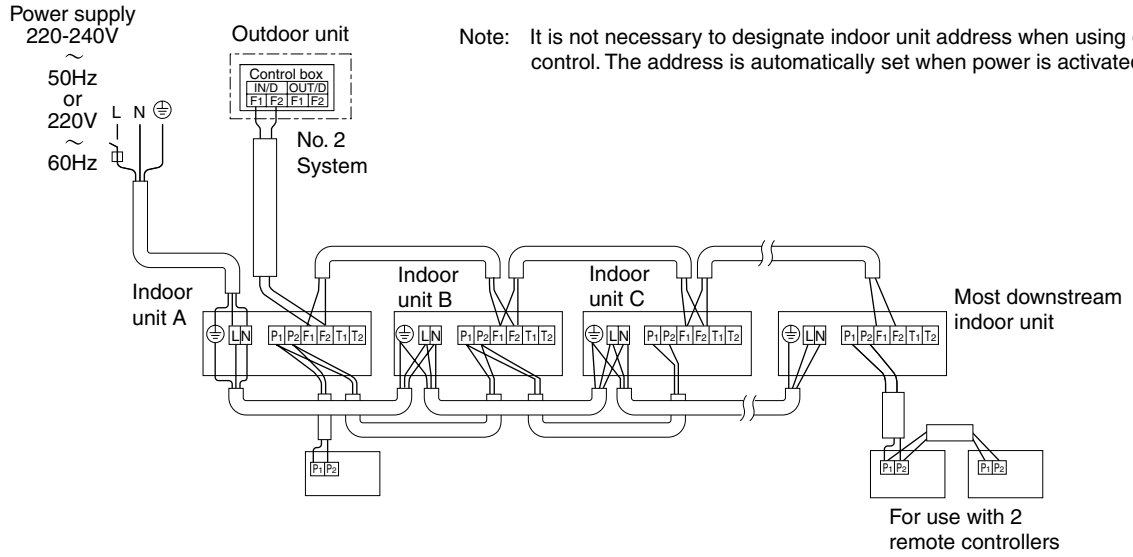
COMPLETE SYSTEM EXAMPLE (3 SYSTEMS)



1. When using 1 remote controller for 1 indoor unit. (Normal operation)

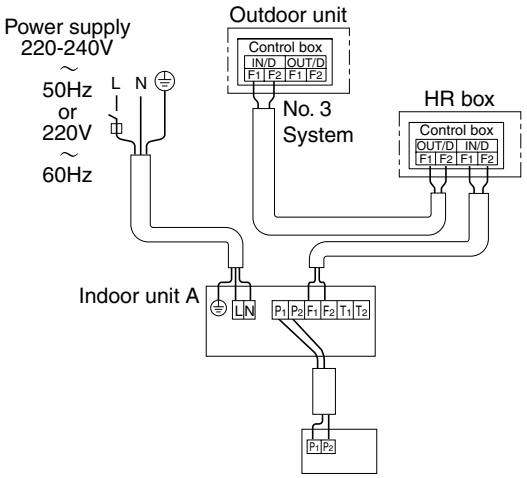

Power supply 220-240V ~ 50Hz or 220V ~ 60Hz
L N
Outdoor unit
Control box
IN/D OUT/D
F1 F2 F1 F2
No. 1 System
Power supply 220-240V ~ 50Hz or 220V ~ 60Hz
Power supply 220-240V ~ 50Hz or 220V ~ 60Hz
Power supply 220-240V ~ 50Hz or 220V ~ 60Hz
L N
P1 P2 F1 F2 T1 T2
Indoor unit A
Indoor unit B
Indoor unit C
Most downstream Indoor unit

2. For group control or use with 2 remote controllers



Note: It is not necessary to designate indoor unit address when using group control. The address is automatically set when power is activated.

3. When including HR box



[PRECAUTIONS]

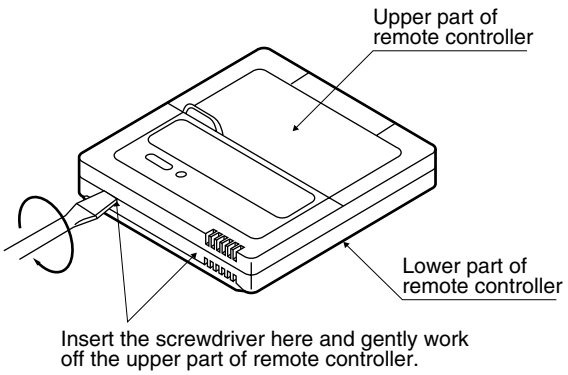
1. A single switch can be used to supply power to units on the same system. However, branch switches and branch circuit breakers must be selected carefully.
2. Do not ground the equipment on gas pipes, water pipes or lightning rods, or crossground with telephones. Improper grounding could result in electric shock.

9-3 CONTROL BY 2 REMOTE CONTROLLERS (Controlling 1 indoor unit by 2 remote controllers)

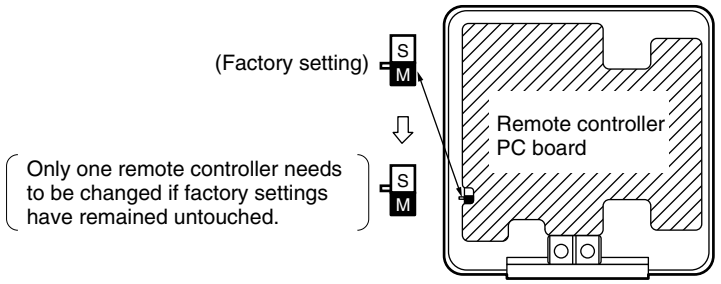
- When using 2 remote controllers, one must be set to “MAIN” and the other to “SUB”.

MAIN/SUB CHANGEOVER

(1) Insert a wedge-head screwdriver into the recess between the upper and lower part of remote controller and, working from the 2 positions, remove carefully the upper part. The remote controller PC board is attached to the upper part of remote controller.


Upper part of
remote controller
Lower part of
remote controller
Insert the screwdriver here and gently work
off the upper part of remote controller.

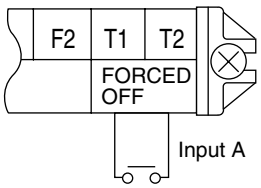
(2) Turn the MAIN/SUB changeover switch on one of the two remote controller PC boards to “S”. (Leave the switch of the other remote controller set to “M”.)



9-4 COMPUTERISED CONTROL (FORCED OFF AND ON/OFF OPERATION)

(1) Wire specifications and how to perform wiring

- Connect the input from outside to terminals T1 and T2 of the terminal board. (remote controller to transmission wiring)



Wire specification	Sheathed vinyl cord or cable (2 wire)
Gauge	0.75 - 1.25 mm^2
Length	Max. 100 m
External terminal	Contact that can ensure the minimum applicable load of 15 V DC, 10 mA.

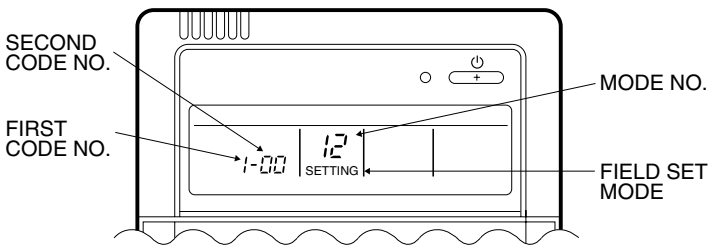
(2) Actuation

- The following table explains FORCED OFF and ON/OFF OPERATIONS in response to Input A.

FORCED OFF	ON/OFF OPERATION
Input “ON” stops operation (impossible by remote controllers.)	Input OFF → ON turns ON unit.
Input OFF enables control by remote controller.	Input ON → OFF turns OFF unit.

(3) How to select FORCED OFF and ON/OFF OPERATION

- Turn the power on and then use the remote controller to select operation.
- Set the remote controller to the field set mode. For details, refer to the “HOW TO SET IN THE FIELD”, in the remote controller manual.
- When in the field set mode, select mode No. 12, then set the first code (switch) No. to “1”. Then set second code (position) No. to “01” for FORCED OFF and “02” for ON/OFF OPERATION. (FORCED OFF at factory set)



9-5 CENTRALIZED CONTROL

- For centralized control, it is necessary to designate the group No. For details, refer to the manual of each optional controllers for centralized control.

10. TEST OPERATION

Refer to the installation manual of the outdoor unit.

- The operation lamp of the remote controller will flash when an error occurs. Check the error code on the liquid crystal display to identify the point of trouble. An explanation of error codes and the corresponding trouble is provided in “CAUTION FOR SERVICING” of the indoor unit.